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09/701,705 12/01/2000 Yukihiro Okumura 15689.61 7195

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EXAMINER

GHULAMALI, QUTBUDDIN

ART UNIT PAPER NUMBER

2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. This action is responsive to amendment filed 3/10/2010.

Response to Remarks/Amendment

2. Applicant's remarks with respect to amended claims 36 and 49 have been fully considered but are moot in view of the new ground(s) of rejection. The prior art rejection of claim 53 as being unpatentable over Abeta in view of Jasper, has been withdrawn in view of new art. The rejection of claims 36, 49 and 53, follows.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 36, 49 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Jasper (USP 5,519,370) in view of Vook et al (USP 5,982,327).

Regarding claims 36 and 49, Jasper et al discloses a channel estimation method for calculating a channel estimation value of data symbols of a data channel using pilot symbols of a pilot channel that was parallel multiplexed together with said data channel (fig. 1, col. 4, lines 14-26), comprising:

dividing (splitting) the data symbols of said data channel into a plurality of data symbol sections (processing unit (102) receives an original information (data) signal (101), converts each serially received 16 into 4 parallel signal paths), selecting (using) pilot

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symbols appropriate for calculating the channel estimation value of the data symbols in each of the data symbol sections (col. 4, lines 16-21, 35-38), and generating weighting factors to be used for weighting and averaging the pilot symbols which vary (offset) from data symbol section to data symbol section in a slot (col. 7, lines 23-65; col. 8, lines 21-29, 54-67; col. 9, lines 1-12; col. 6, lines 37-62); and

weighting and averaging said pilot symbols using said weighting factors (coefficients) and calculating the channel estimation value of the data symbols in each of the data symbol sections (col. 7, lines 23-65; col. 8, lines 21-29, 54-67; col. 9, lines 1-12).

As per setting rates of data channel and pilot channel, that is to set them equal or different given the information as in Jasper of pilot insertion and pilot symbol sequences resulting in pilot rate increase for various sub-channels, is a matter of obvious choice a person of ordinary skill in the art at the time of invention would have made to arrive at data rate different from the transmission rate of pilot channel to anticipate the invention.

Jasper does not explicitly disclose each data symbol sections includes a plurality of data symbols. However, Vook in a similar field of endeavor discloses (fig. 3) each data symbol sections includes a plurality of data symbols (col. 5, lines 20-43). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize a plurality of data symbols of data sections as taught by Vook in the system of Jasper because it can allow minimization of errors (interference) with an increase in the overall efficiency of the communication link the motivation would be to minimize the use of pilots and at the same time improve efficiency while simultaneously being able to track variations in the channel.

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5. Claim 53, is rejected under 35 U.S.C. 103 (a) as being unpatentable over Ono (USP 5,999,560) in view of Dabak et al (USP 6,483,821).

Regarding claim 53, Ono discloses a demodulating device comprising:
channel estimating means for deriving N (N is natural number greater than or equal to two) (interpreted as plurality of channel estimation values) number of channel estimation values (col. 6, lines 3-16) by weighted averaging of pilot signals in time using a number of weighted sequences (col. 5, lines 44-58);
compensating means for compensating data sequences using said respective channel estimation values (col. 1, lines 21-38);
RAKE combining means for RAKE combining respective of said N data sequences after compensation (col. 1, lines 10-38; col. 5, lines 44-58). Ono does not explicitly disclose reliability judgment means for selecting a data sequence having highest reliability from a number of data sequences after RAKE combination. However, Dabak in a similar field of endeavor discloses reliability judgment means for selecting one data sequence having highest reliability from a number of data sequences after RAKE combination (col. 4, lines 65-67; col. 5, lines 1-30). It would have been obvious to a person of ordinary skill in the art at the time of invention to use reliability judgment means for selecting a data sequence having highest reliability from a number of data sequences as taught by Dabak in the system of Ono because it can provide efficient channel estimation with improved performance while transmitting minimal number of pilot symbols for reception.

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Allowable Subject Matter

1. Claims 1-2, 4-6, 8, 18-20, 22-23, 33-35, 37, 47, 54-85 allowed.

Contact Information

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutbuddin Ghulamali whose telephone number is (571)-272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.
June 3, 2010.

/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611